AMENDMENTS TO THE CLAIMS

Claims 1-25. (Canceled)

26. (Currently Amended) A method of forming a diode on an original substrate, comprising the steps of: forming an anode of a first conductivity type and a cathode of a second conductivity type disposed below said anode on ~~a substrate~~ said original substrate without removing any portion of said original substrate and replacing with another substrate material ~~any portion of said substrate~~, wherein at least one of said cathode and anode comprise a plurality of vertically abutting diffusion regions; and forming a plurality of isolation regions in said original substrate, said cathode and anode being disposed between adjacent ones of said plurality of isolation regions, said plurality of isolation regions extending deeper into said original substrate than said cathode and said anode.

27. (Original) The method as recited in claim 26, wherein said isolation regions comprise a plurality of insulation-filled trenches having sidewalls that are substantially vertical.

28. (Original) The method as recited in claim 26, wherein said isolation regions comprise a plurality of insulation-filled trenches having sidewalls that are tapered.

29. (Currently Amended) The method as recited in claim 26, wherein said step of forming said cathode comprises:
forming a first doped region of a second conductivity type abutting said anode; and forming a second doped region of said second conductivity type abutting and disposed below said first doped region and contacting said original substrate, said first and second doped regions having different dopant concentrations.

30. (Previously Presented) The method as recited in claim 29, further comprising the step of: forming a second pair of isolation structures disposed between said adjacent isolation regions and said anode.

31. (Currently Amended) The method as recited in claim 26, wherein said isolation regions are formed by a process comprising the steps of:
etching said original substrate to form trenches;
depositing at least one insulator; and
removing portions of said insulator outside of said trenches.

32. (Previously Presented) The method as recited in claim 31, wherein said step of depositing comprises deposition of a fill material.

33. (Previously Presented) The method as recited in claim 29, wherein said step of forming said cathode further comprises the step of forming a third doped region disposed between said first doped region and said second doped region.

34. (Original) The method as recited in claim 33, wherein said third doped region comprises a retrograde-doped region.

35. (Currently Amended) The method as recited in claim 26, wherein said step of forming said anode comprises the steps of:
forming a first doped region abutting said cathode; and
forming a second doped region on a surface of said original substrate, said second doped region having a higher concentration of dopant than said first doped region.

36. (Original) The method as recited in claim 35, wherein said first doped region comprises a retrograde-doped region.

37. (Currently Amended) The method as recited in claim 35, further comprising the steps of: forming a plurality of diffusion regions of said second conductivity type on a surface of said original substrate.

38. (Previously Presented) The method as recited in claim 37, further comprising the step of: forming a plurality of second isolation regions that separate said plurality of diffusion regions from said cathode.

39. (Currently Amended) The method as recited in claim 26, wherein said cathode is in electrical contact with said original substrate.

40. (Previously Presented) The method as recited in claim 26, wherein said cathode is disposed entirely below said anode.

41. (Previously Presented) The method as recited in claim 26, wherein a junction formed between said anode and said cathode is bounded by said adjacent ones of said plurality of isolation regions.

42. (Previously Presented) The method as recited in claim 26, wherein said original substrate comprises a single crystal material.